Carriage, Inc.
Draft Class 3 Permit Mod

Permit Condition IV. Ground Water Monitoring Conditions

IV. GROUND WATER MONITORING CONDITIONS

A. GENERAL SITE INFORMATION

The regulated unit, a closed hazardous waste landfill, is approximately 2.2 acres and is located on the south side of the Carriage Incorporated (Carriage) travel trailer and related products manufacturing complex. (Detailed at Sections 3.1 and 3.2 of Permit Attachment IV.)

Carriage used the landfill primarily for manufacturing related disposal of solid, non-hazardous waste that included wood, fiberglass, waste steel, aluminum, copper wire and break room and office trash. Between September 1984 and October 1986, small quantities, reportedly less than 300 pounds, of acetone still bottoms were disposed within the landfill. No records of the burial location(s) exist. The landfill has no liner system. Waste fill thickness ranges from 2 to 8.5 feet, and all of it is believed to exist above the water table. An engineered four-foot cap was installed in 1996. (Detailed at Section 3.3 of Permit Attachment IV.)

Regional geology consists of approximately 250 feet of unconsolidated glacial sediment overlying bedrock. Sediments across much of the Carriage facility are characterized by several feet of surficial clayey sediments overlying approximately 25 feet of generally medium sand and gravelly coarse sand of which 3.5 to 13 feet is saturated and identified as the uppermost aquifer beneath the landfill. A regionally extensive thick, dense clay unit separates the upper aquifer from a deeper sand-and-gravel aquifer that is utilized as a source of drinking water in the general site region. Existing monitoring wells are screened across the uppermost aquifer and include two upgradient (only one of which requires sampling under this permit) and four along the point of compliance at the landfill. Ground water flow is variable but generally towards the southeast. (Detailed at Section 3.4 of Permit Attachment IV.)

A compliance monitoring program is specified in this permit due to the detection of hazardous constituents in the ground water at the point of compliance. Data indicates the landfill may have released benzene, ethylbenzene, and the metals, antimony, barium, beryllium, cobalt, copper, nickel, and zinc. Additionally, ground water impacted by chlorinated volatile organic compounds (VOCs) has been detected in residential areas downgradient of the landfill and Carriage complex. While evidence indicates that a historic plume from upgradient of the landfill is the primary source of the chlorinated VOCs, the landfill itself has the potential of having contributed to the plume. (Detailed at Section 3.5 of Permit Attachment IV.)

B. GROUND WATER MONITORING SYSTEM

1. The Permittee will operate and maintain a compliance ground water monitoring system in accordance with the procedures and requirements of 40 CFR 264.99. The Permittee shall install and maintain ground water monitoring wells and piezometer at the locations identified on the map found in Permit Attachment IV Exhibit IV-1 with the compliance ground water monitoring system at permit issuance consisting of the following monitoring wells:

Upgradient:	MW-3
Downgradient:	MW-1, MW-2, MW-5, MW-6

and the following piezometer:

Upgradient:	MW-7

The unique identification (i.e. MW-1, MW-2 etc.) and a survey mark from which ground water elevations are measured shall be permanently affixed, readily visible, and maintained on each throughout the post-closure. The unique identification must be used in reporting all information from the wells and piezometer.

2. The Permittee shall construct, inspect and maintain the monitoring wells and piezometer specified in Permit Condition IV.B.1. Boring logs and well construction diagrams for each of these are provided in Appendix D of Permit Attachment IV. Each ground water monitoring well and piezometer must be constructed and maintained in accordance with the standards of 40 CFR 264.97(c) and be capable of providing representative ground water samples.

3. Each new or replacement monitoring well and piezometer the Permittee installs for the purpose of compliance with this Permit, shall meet the requirements of 40 CFR 264.97(a) and (c). Each new soil borings, monitoring wells or piezometers installed to maintain compliance with this Permit shall be completed in accordance with IDEM's Requirements for Describing Unconsolidated Deposits (Permit Attachment IV, Exhibit IV-2) and U.S. EPA's RCRA Ground-Water Monitoring Draft Technical Guidance, November, 1992. The location of each new well and piezometer must be surveyed to a permanent reference mark on the casing and referenced from U.S. Coast and Geodetic bench marks, U.S. Geological Survey bench marks, or their equivalent and certified by a licensed professional surveyor. The National Geodetic Vertical Datum elevations of the ground surface, surface pad, and top of the well casing (both the well and protective casing), must be surveyed to an accuracy of one hundredth (0.01) of a foot. The horizontal position must be surveyed to an accuracy of one (1.0) foot.

4. The Permittee will conduct well inspection and maintenance procedures as described in Permit Attachments II and IV. If it is determined that a monitoring well is compromised beyond reasonable repair or that an existing well cannot yield representative samples, the Permittee must install a replacement well as soon as technically feasible through a permit modification in accordance with permit Condition IV.B.5. If the Permittee discovers correctable damage or deterioration at a well, all necessary repairs shall be completed within thirty (30) days of discovery. If the damage discovered poses a threat to the integrity of the well or aquifer and a permanent remedy can not be immediately achieved, then the Permittee shall at discovery implement interim measures to secure the well or piezometer until repairs or replacement is completed. If the Permittee determines repairs can not be completed within 30 days due to inclement weather or other unforeseen circumstances, the Permittee shall notify IDEM's Geology Section by telephone within one business day of making that determination and within seven

(7) days of the determination submit written justification for an alternate repair schedule.

5. The Permittee shall submit a permit modification request in accordance with 40 CFR 270.42 for any additional borings, new or replacement monitoring wells or piezometers and the sealing of any wells or piezometers necessary to maintain compliance with 40 CFR 264.97 and 40 CFR 264.99. Any abandonment of wells or piezometers shall be in accordance with Indiana Department of Natural Resources rules at 312 IAC 13-10-2 (Regulation of Water Well Drillers).

6. The Permittee shall submit to the IDEM, Office of Land Quality, Hazardous Waste Permit Section, a report on the progress of all new soil borings, new or replacement wells, well removals, well repairs, or well development within sixty (60) days of completion. Reports shall contain, when applicable, a description of decontamination, drilling, and construction procedures, as-built construction diagrams, soil boring logs, geotechnical laboratory results, surveyed coordinates, and an updated map showing well locations.

C. GROUND WATER PROTECTION STANDARD

These permit conditions establish the elements of the ground water protection standard that are used through this permit to determine compliance.

1. Compliance Monitoring Constituents:
The Permittee will monitor the ground water at the point of compliance for the following compliance monitoring constituents. These compliance monitoring constituents have been selected for having been detected in the ground water of the uppermost aquifer underlying the regulated unit.

   a. Volatile Organic Compound (VOC) Constituents:
   Acetone, Benzene, Carbon Disulfide, Chloroethane, 1,1-Dichloroethane, cis-1,2-Dichloroethylene, Ethylbenzene, 1,1,1-Trichloroethane, Trichloroethylene, Vinyl Chloride

   b. Metals Constituents:
   Antimony, Barium, Beryllium, Cobalt, Copper, Nickel, Zinc

2. Concentration Limits:
The concentration limits for each of the compliance monitoring constituents identified in Permit Condition IV.C.1. are established or derived on the following basis as detailed in Section 4.1 of Permit Attachment IV.

   a. VOC Constituents:
   The Permittee will be in compliance for VOC constituents if the intra-well statistical evaluations indicate the current post-closure monitoring results from a given well indicate stable or decreasing concentration relative to historical concentrations at the same well. This approach is consistent with IDEM's policy of allowing no further degradation of the ground water.

b. Metals Constituents:
Table 4.1 of Attachment IV lists the concentration limits for metals constituents that the Permittee must not exceed at permit issuance to be in compliance. These concentration limits are from Table 1 of 40 CFR 264.94, or are alternate concentration limits established from available reference limits, such as U.S. EPA Maximum Contaminate Limits (MCLs) for drinking water, the IDEM Risk Integrated System of Closure (RISC) default residential cleanup goals for ground water, and the health protective goals for untreated ground water used as drinking water per Indiana's Ground Water Protection Standards 327 IAC 2-11-6. If subsequent data indicates that the concentration of a metal in the background exceeds the groundwater protection standard established at permit issuance, then the values obtained from the background well for that constituent will thereafter be used to establish a ground water protection standard that replaces the one established at permit issuance.

c. Compliance Monitoring Constituents Added After Permit Issuance:
After the issuance date of this post-closure permit, procedures at Permit Condition IV.G.4 can require the addition of one or more 40 CFR 264 Appendix IX constituents to the list of Compliance Monitoring Constituents at Permit Condition IV.C.1. The concentration limit for each added constituent will be established in accordance with the procedures specified in Item 1 of Permit Attachment IV, Appendix G.

3. Point of Compliance:
The point of compliance is the vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated unit. Based on current interpretations of ground water flow, the point of compliance is located along the entire southern and eastern boundaries of the waste management unit as depicted on the map labeled Permit Attachment IV Exhibit IV-1. Monitoring wells MW-5, MW-6, MW-1, and MW-2 are located along the point of compliance.

4. Compliance Period:
The compliance period, during which the ground water protection standard applies, shall commence upon the effective date of this permit. The compliance period is thirteen (13) years as determined by the number of years of the active life of the waste management area and the closure period. This period was calculated as follows:

Active Life of the Unit:	1984 - 1986
Closure Period:	1986 - 1997
Compliance Period:	13 years

D. SAMPLING AND ANALYSIS PROCEDURES

1. The Permittee shall follow the procedures within Permit Attachment IV for the collection, preservation, analysis and control of all compliance monitoring program ground water samples.

2. The Permittee shall determine the method of sample collection, bailer verses bladder pump, dependant on the outcome of a turbidity demonstration test detailed at Section 7.5 of Permit Attachment IV.

3. With the exception of collecting additional background samples on a quarterly basis per Permit Condition IV.G.7, the Permittee shall sample each well for the compliance monitoring program semi-annually throughout the post-closure period. Compliance parameter values shall be single independent values for evaluation of compliance with the ground water protection standards.

4. Turbidity field tests are to be conducted during routine groundwater sampling events and the turbidity results evaluated in accordance with the procedures described in Item 2 of Permit Attachment IV, Appendix G.

E. GROUND WATER SURFACE ELEVATION

The Permittee shall follow procedures of the SAP specified at Permit Condition IV.D to determine the ground water surface elevation in each monitoring well and piezometer each time the ground water is sampled in accordance with Permit Condition IV.G.

F. DIRECT COMPARISON AND THE STATISTICAL EVALUATION

The Permittee shall use the direct comparison or statistical procedures described in Sections 6.0 and 6.1 of Permit Attachment IV to evaluate compliance for each constituent specified in Permit Condition IV.C.1 at each downgradient monitoring well specified in Permit Condition IV.B.1.

G. COMPLIANCE MONITORING PROGRAM AND DATA EVALUATION

The Permittee shall implement a compliance monitoring program that is capable of determining the ground water quality as follows:

1. The Permittee shall collect, preserve, analyze, and control ground water samples in accordance with Permit Condition IV.D.

2. During the compliance period, the Permittee shall determine the concentrations of the compliance monitoring constituents (identified at Permit Condition IV.C.1) in ground water at each monitoring well specified by Permit Condition IV.B. These determinations shall be made semi-annually.

3. Using the ground water surface elevation data, collected in accordance with Permit Condition IV.E, the Permittee shall determine ground water flow rate at least annually and shall prepare a ground water potentiometric surface map depicting the direction of flow each time samples are collected. The Permittee shall submit a permit modification in accordance with Permit Condition IV.B.5 for any additional wells and/or piezometers needed if and when the ground water flow direction indicates that the monitoring wells are no longer adequately monitoring the point of compliance as specified under Permit Condition IV.C.3.

4. Requirements per 40 CFR 264.99(g):

   a. Annually (once every calendar year) throughout the compliance period specified at Permit Condition IV.C.4, the Permittee must determine whether additional hazardous constituents from 40 CFR 264 Appendix IX, not on the compliance monitoring constituent list at Permit Condition IV.C.1, are present and at what concentration according to procedures specified in Permit Attachment IV. Sections 4.1 and 5.8 of Permit Attachment IV specify the evaluation procedures to determine whether additional Appendix IX constituents are actually present, and Section 4.1 contains provisions for communicating results to IDEM. If the annual sampling indicates that an additional Appendix IX constituent is present in the ground water, the Permittee may resample and repeat the analysis as allowed and specified in Section 4.1 of Permit Attachment IV. If the second analysis confirms the presence of a new constituent, the Permittee must report the concentration of the additional constituent to the IDEM within seven (7) days after receipt of the second completed analysis and add the constituent to the compliance monitoring constituent list. If the Permittee chooses not to resample, then he or she must report the concentration(s) of the additional constituent(s) to IDEM within seven days after receipt of the initial analysis, and add the constituent(s) to the compliance monitoring constituent list. Reporting timeframes are further defined at Permit Condition IV.G.8.

   b. If unavoidable circumstance warrant, the Permittee may request IDEM approval for a time extension to conduct the resampling allowed in Permit Condition IV.G.4.a. IDEM may grant extensions on a case-by-case basis if the Permittee can adequately justify the need for the extension and demonstrates good faith by minimizing the duration of any anticipated delay and by avoiding a routine recurrence of such delays. In granting an extension IDEM may require that the Permittee provide written documentation of the unavoidable circumstances or series of events that led to the delayed resampling.

5. For each compliance monitoring constituent identified in Permit Condition IV.C.1, the Permittee shall determine whether there is a direct or a statistically significant increase over the concentration limit for that constituent each time the concentration is monitored in the ground water at the point of compliance, pursuant to Permit Condition IV.G.2. In determining whether such an increase has occurred, the Permittee shall compare the ground water quality at each monitoring well specified in Permit Condition IV.B.1 to the concentration limit for that constituent specified in Permit Condition IV.C.2, in accordance with the procedures specified in Permit Condition IV.F. If any compliance monitoring constituents subjected to the evaluation procedure described exceeds its ground water protection standard at Permit Condition IV.C, then the Permittee shall follow the procedures at Permit Condition IV.J.

6. The Permittee shall perform the direct or statistical evaluations required by

Permit Condition IV.G.5 within 21 days of receiving the analytical results from the laboratory, not withstanding however, the evaluations shall be completed such that a report is submitted in compliance with Permit Condition IV.H.2.

7. The Permittee shall fulfill the compliance monitoring program's background data set establishment needs as is defined in the statistical analysis plan at Sections 6.0 and 6.1 of Attachment IV. The sample size shall be as large as necessary to ensure with reasonable confidence that it will fully implement the constituent evaluation criteria at Permit Condition IV.G.5.

8. To clarify timeframes at Permit Conditions IV.G, H, J and K regarding: Appendix IX resampling, reporting and notification requirements, and the determination that a ground water protection standard has been exceeded; timeframes that specify commencement following receipt of analytical results begin on the date the Permittee receives the final analytical results either directly from the testing laboratory or within a report completed by a consultant contracted by the Permittee to review and approve the analytical results as part of the compilation of a monitoring report for submittal to the Permittee.

9. Per 40 CFR 264.99(g), reductions to the annual Appendix IX sampling requirement at Permit Condition IV.G.4.a are as follows:

   a. Monitoring well MW-2 may be excluded from the annual sampling required at Permit Condition IV.G.4.a as described in Item 3 of Permit Attachment IV, Appendix G.

   b. The Appendix IX constituent list for the annual determination at Permit Condition IV.G.4 may be reduced to eliminate sampling for PCBs and certain other Pesticide and Herbicide constituents as defined in Item 3 of Permit Attachment IV, Appendix G.

H. RECORD KEEPING AND REPORTING

1. The Permittee shall maintain in the on-site operating record, all monitoring, testing, and analytical data obtained pursuant to Permit Condition IV.G. The operating record shall include a copy of the Permit and all documentation consisting of original paper and electronic media generated in compliance with the requirements of this Permit. Specifically, the record must contain inclusive documentation for each ground water sampling event conducted in compliance with the requirements of this Permit including: inspection and maintenance reports for the ground water monitoring system, ground water monitoring data including field and laboratory analytical results for monitoring wells and associated QA/QC data and evaluations, data summary tables, statistical calculations and evaluations, monitoring well and ground water elevations, ground water flow rate and direction determinations and evaluations, reports and notifications to the IDEM.

2. Submission of Ground Monitoring Reports:

   a. Throughout the post-closure monitoring period, the Permittee shall submit reports containing the applicable inspection and maintenance records, analytical results, data evaluation, and compliance evaluations required by Permit Conditions IV.B.2, IV.E, IV.G.2, IV.G.3, IV.G.4, IV.G.5, and IV.G.7 to the IDEM, Office of Land Quality, Geology Hazardous Waste Permit Section, Chief within 90 days of sample collection as specified in Permit Attachment IV. The Permittee shall also include in reports to IDEM any applicable reporting that Permit Attachment IV instructs the Permittee to include.

   b. The Permittee shall make a good faith effort to submit the reports of Permit Condition IV.H.2.a within the specified timeframes. If unavoidable circumstance warrant, the Permittee may request IDEM approval for a time extension for the submission of the required report. IDEM may grant extensions on a case-by-case basis if the Permittee can adequately justify the need for the extension and whenever possible demonstrates good faith by notifying IDEM on a timely basis prior to the date the report is due. In granting an extension IDEM may require that the Permittee provide written documentation of the unavoidable circumstances or series of events that led to the delayed submission.

3. In accordance with 329 IAC 3.1-9-2 the Permittee shall submit a minimum of two (2) paper copies of each report submitted to meet Permit Condition IV.H.2 and provide a digital copy of the analytical data per Permit Attachment IV, Exhibit IV-3.

4. If the Permittee determines under Permit Condition IV.G.5 that the ground water protection standards have been exceeded for the constituents specified in Permit Condition IV. C., the Permittee shall notify the Commissioner in writing within seven (7) days of the determination as specified at Permit Condition J.

5. The Permittee shall report in writing to the Commissioner the concentrations of any additional 40 CFR 264 Appendix IX constituents confirmed to be present in the ground water at Permit Condition IV.G.4 within seven (7) days of receipt of the analytical results.

I. ASSURANCE OF COMPLIANCE

The Permittee must assure that monitoring and corrective action measures necessary to achieve compliance with the ground water protection standard under 40 CFR 264.92 are taken during the term of the permit. To achieve this, ground water monitoring meeting the requirements of 40 CFR 264 Subpart F shall be conducted by the Permittee throughout the duration of the post-closure care period.

J. EXCEEDING THE GROUND WATER PROTECTION STANDARD

1. The Permittee shall notify the Commissioner in writing within seven (7) days of

the determination that the ground water protection standard specified at Permit Condition IV.C has been exceeded at any monitoring well. The notification must indicate which concentration limits have been exceeded.

2. The Permittee must submit to the Commissioner a permit modification to establish a corrective action program meeting 40 CFR 264.100 requirements within 180 days, or within 90 days if the Permittee has previously submitted an engineering feasibility study. The information requirements for the permit modification are outlined in 40 CFR 264.99(h)(2)(i) and (ii).

3. The Permittee may make a demonstration that the ground water protection standard was exceeded due to sources other than a regulated unit or errors in sampling, analysis, or evaluation.

   a. The Permittee must notify the Commissioner in writing, within seven (7) days that a demonstration will be made.

   b. The Permittee must submit a report to the Commissioner, within 90 days, that demonstrates that a source other than a regulated unit caused the ground water protection standard to be exceeded or that the apparent non-compliance was a result of an error in sampling, analysis, or evaluation.

   c. The Permittee must submit to the Commissioner within 90 days an application for a permit modification in accordance with Permit Condition IV.J.4 to make any appropriate changes in the compliance monitoring program at the facility.

   d. The Permittee must continue the compliance monitoring program in accordance with 40 CFR 264.99.

4. If the Permittee or the Commissioner determines that the compliance monitoring program required by this permit no longer satisfies the requirements of 40 CFR 264.99, then within ninety (90) days of the determination or notification from the Commissioner, the Permittee must submit an application for a permit modification to make appropriate changes to the program. Permit modification procedures are specified at 40 CFR 270.42.

K. REQUEST FOR PERMIT MODIFICATION

If the Permittee or the Commissioner determines the concentration limits at Permit Condition IV C is being exceeded at any monitoring well at the point of compliance, the Permittee shall submit to the Commissioner an application for a permit modification to establish a corrective action program meeting the requirements of 40 CFR 264.100. Permit modification procedures are specified at 40 CFR 270.42. The application must be submitted within 180 days of the Permittee's determination or notification from the Commissioner.

Carriage, Inc.
Draft Class 3 Permit Mod

Table of Contents

TABLE OF CONTENTS (continued)

Volume I of II

APPENDICES

VOLUME II OF II

2010 PERMIT MODIFICATION

will be collected for the analyses of specified VOC and Metals on a semi annual basis and for Appendix IX parameter analysis on an annual basis. Additional sampling on a quarterly basis is to be conducted, as may be needed, to establish background data for statistical evaluations for certain parameters (e.g. certain Metals).

If an Appendix IX constituent is detected that is not already being monitored as a compliance monitoring constituent at Permit Condition IV.C.1, Carriage may resample within 30 days of receipt of the completed laboratory analysis (defined at Permit Condition IV.G.8) to make a determination of whether the new constituent is actually present in the groundwater. If Carriage chooses to resample, a complete report containing the results of the initial sampling will be submitted to IDEM within 90 days of sample collection; and the report will indicate which Appendix IX results are to be further evaluated through a planned resampling. If Carriage chooses not to resample within 30 days of receipt of the completed laboratory analysis, or if the new constituent is determined to be present after a second analysis, the concentration of the new constituent will be reported to the IDEM within seven (7) days after receipt of the completed laboratory analysis, and the new constituent will be added to the list of identified hazardous constituents to be monitored on a semi-annual basis. If the second analysis does not confirm the presence of the constituent not already listed at Permit Condition IV.C.1, the Permittee shall submit a report of the resampling results; and the hazardous constituent need not be added to the compliance monitoring constituent list. At a minimum, a summary of the results of the re-sampling are to be provided to IDEM prior to the next semi-annual sampling event with a goal of providing IDEM a reasonable advanced notice (typically not less than two weeks) of Carriage's sampling plans for the upcoming semi-annual event. If it appears that goal can not be met through a report, Carriage or their consultant will contact the IDEM project Geologist at least two weeks prior to the next semi-annual event to discuss the situation and any preliminary results available at that time. Although at a minimum a summary of the results of the resampling are to be communicated to IDEM prior to the next semi-annual event, Carriage shall have submitted the complete report of the results within 90 days of sample collection, unless a time-extension has been granted in accordance with Permit Condition IV.H.2.b.

If any constituents are found to exceed the concentration limits specified in 40 CFR 264.94 and as otherwise specified below and by the Permit (see below), the concentration will be reported by Carriage to the IDEM within seven (7) days after receipt of the completed laboratory analysis (as defined at Permit Condition IV.G.8) and other notifications, modifications of the Permit and/or demonstration shall be conducted as appropriate and as required by 40 CFR 264.99(h) and (i). The results of each semi-annual monitoring event for hazardous constituents shall be evaluated to determine if established groundwater protection standards (see below) have been exceeded and/or if a statistically significant increasing trend has been detected. Additional quarterly sampling will be conducted as may be needed to establish baseline or background data for certain parameters for statistical evaluations. Details regarding statistical evaluation procedures are provided in Section 6.0 of this QAPP.

The post-closure monitoring of groundwater from monitoring wells at the Carriage Landfill Unit also will involve the collection of groundwater static water level data from monitoring wells MW-1, MW-2, MW-3, MW-5, MW-6 and MW-7. The static water level data will be used to determine groundwater flow directions and will be routinely obtained during each groundwater-sampling event. Assessments of possible siltation (see Section 7.0) and checks of monitoring well conditions are to be conducted during each groundwater-sampling event (see Section 5.0). In addition, evaluations regarding possible effects of turbidity on the analysis of Metals are to be conducted (see Section 7.0). The specific details for the required procedures for the routine collection of groundwater samples from the monitoring wells are provided in the Sampling-and–Analysis Plan (see Section 5.0).

The list of Appendix IX constituents to be monitored on an annual basis is provided in Appendix A of this QAPP. Details regarding the analytical methods and constituents for the annual Appendix IX monitoring are provided in Section 5.8. [Note that, in accordance with recommendations from the IDEM (IDEM letter to Carriage dated October 1, 2001), the annual Appendix IX monitoring need not include Dioxins and Furans unless either of the Dioxin/Furan-screening compound types identified as chlorinated phenols (e.g. Pentachlorophenol) or phenoxy acids (e.g. 2,4-D, 2,4,5-T or Silvex) are detected. (see details in Section 5.8)] Certain hazardous Appendix IX constituents (certain VOC and Metals) have been previously detected in groundwater samples collected during interim monitoring at the Landfill Unit. These certain Appendix IX hazardous constituents are specified for monitoring on a semi annual basis (see below).

Form for the well from which the field duplicate sample was collected. This form and the identity of the well will not be submitted to the laboratory. The additional sample bottle requirements for field duplicate samples for monitoring well sampling events are identified in Table 5.1.

Field Equipment Rinse Blank Sample: A field equipment rinse blank sample will be collected towards the end of each monitoring well sampling event. The field equipment rinse blank sample serves as a check on the effectiveness of the decontamination of non-dedicated monitoring well sampling equipment. The field equipment rinse blank sample will be identified as "FB(MW)", "EB(MW)," or "ERB(MW)" when submitted to the laboratory. The field equipment rinse blank sample is to consist of de-ionized water flushed over or through all non-dedicated sample contacting equipment, such as a bailer and the filter pump tubing (without the disposable filter), after the final decontamination rinse. The analysis of the Field Equipment Rinse Blank Sample for the semi-annual and annual Appendix IX sampling events can be limited to those parameters typically tested during the semi-annual monitoring event.

Trip Blank Sample: A Trip Blank Sample for VOC analysis will accompany the sample bottles to and from the field. A Trip Blank Sample will not be required for a sampling event if other samples collected during the sampling event are not analyzed for VOC. The trip blank sample provides a check on the cleanliness of the sample containers and also as a check for possible cross contamination that might occur to samples in the cooler after collection and prior to submittal to the laboratory for analysis. The testing laboratory is to prepare the trip blank sample of Type II reagent grade water and provide it along with the sample containers in a cooler to the Project Manager. The trip blank sample will be returned to the testing laboratory for analysis along with the other samples associated with the sampling event. The trip blank sample will be identified as "Trip Blank" when submitted to the laboratory.

Equipment Decontamination for Monitoring Well Samples:

All non-disposable monitoring well sampling equipment which may come in direct contact with the groundwater or samples are to be cleaned before use to purge or sample a well. This includes equipment such as purge-and-sample bailers, water level sensors, and any non-dedicated filtration tubing. This equipment is to be cleaned using a solution of non phosphate detergent in tap water and then rinsed for a minimum of three (3) times with de-ionized water. When not actually in a well, clean bailers and sampling rope are to be placed in a container (e.g. large plastic "trash can") lined with a clean new plastic bag to prevent contact with potentially contaminated surfaces (e.g. the ground).

If the filtration pump tubing used to filter the portion of the sample to be analyzed for Metals is not dedicated, new tubing, then the tubing must be decontaminated prior to each use. The decontamination will consist of an external wash and the pumping of a non-phosphate detergent solution through the tubing followed by a thorough rinse and flush with de-ionized water. Immediately before connecting the filter cartridge and collecting a filtered sample for Metal analysis, a small amount of the sample water to be filtered shall be pumped through the filtration pump tubing to flush out any residual de-ionized water that may remain in the tubing from decontamination. A new, disposable filter cartridge will be used for each well. Therefore, no decontamination of the disposable filter is to be conducted.

The laboratory testing, QA/QC and reporting procedures will be those specified in the TestAmerica Quality Assurance/Quality Control Manual (see copy in Appendix F of this QAPP) as are applicable to the scope of this QAPP and the parameters, methods and detection limits listed in Appendix A. The laboratory report and laboratory QA/QC support documentation to be submitted to the Project Manager for a given post-closure monitoring sampling event are to include the following laboratory QA/QC data as may be applicable to the requested analyses:

- Signed chain-of-custody records.
- Analysis results.
- Analysis dates.
- Analytical methods used.
- Estimated quantitation limits.
- Method of standard addition (ICP) or serial dilution analysis, as applicable.
- Tuning results (GC-MS).
- Initial and continuing calibration results.
- Method blank results.
- Internal standard areas.
- Matrix duplicate results, as applicable.
- Matrix spike/duplicate matrix spike results.
- Laboratory control samples.
- Surrogate Recoveries.

Carriage, Inc.
Draft Class 3 Permit Mod

Addendum to Attachment IV, Appendix G (1)

ITEM 1 of Permit Attachment IV, Appendix G

Compliance Monitoring Constituents Added After Permit Issuance

After the issuance date of this post-closure permit, procedures at Permit Condition IV.G.4 can require the addition of one or more 40 CFR 264 Appendix IX constituents to the list of Compliance Monitoring Constituents at Permit Condition IV.C.1. The concentration limit for each added constituent is established, where available, from the higher of the published reference limits of Table 1 of 329 IAC 3.1-9-2 (11) or alternate concentration limits from published reference limits of Table 1 of 40 CFR 264.94, U.S. EPA MCLs for drinking water, the IDEM RISC default residential cleanup goals for ground water, or the health protective goals for untreated ground water used as drinking water per Indiana's Ground Water Protection Standards 327 IAC 2-11-6. If subsequent data indicates that the added constituent's background concentration exceeds the ground water protection standard established, then the values obtained from the background well for that constituent will thereafter be used to establish a new ground water protection standard for that constituent. The compliance limit for any added constituent lacking a published reference limit in the sources noted above shall be established based on concentration values obtained from the background well following the background establishment procedures described for metals under Section 6.1 of Permit Attachment IV. The Permittee shall submit to IDEM documentation of the establishment of a concentration limit per this permit requirement for each new addition to the list of Compliance Monitoring Constituents at Permit Condition IV.C.1; the documentation shall be submitted either within 90 days of receipt by the Permittee of the completed laboratory analysis which required the constituent addition or within 90 days of receipt by the Permittee of the completed laboratory analysis for the final background sampling event needed when background is used as the compliance limit. The proposal of a concentration limit other than those established through this permit requirement requires the submission of a request for a permit modification in accordance with 40 CFR 270.42. Such a modification request must be submitted to the Hazardous Waste Permit Section within 90 days of receipt by the Permittee of a completed laboratory analysis which required the addition of a constituent to the list of Compliance Monitoring Constituents at Permit Condition IV.C.1.

Carriage, Inc.
Draft Class 3 Permit Mod

Addendum to Attachment IV, Appendix G (2)

ITEM 2 of Permit Attachment IV, Appendix G:

Field Turbidity Testing & Evaluation

The following is a copy of the procedures for turbidity testing and evaluation that will be used in the post-closure monitoring program. These procedures were previously described in Section 4.0 of the Groundwater Monitoring Report, dated May 12, 2005, for the March 2005 groundwater monitoring event:

> Immediately after collection, a portion of each groundwater sample will be placed in a special unpreserved vial and then analyzed in the field for turbidity using a LaMotte Model 2020 (or equivalent) turbidity meter. The meter will be calibrated and operated in accordance with the meter's user manual directions. Documentation regarding the calibration, subsequent calibration checks and the field turbidity analysis results will be documented on Monitoring Well Sampling Forms.
>
> The results of the field turbidity analyses will be statistically evaluated using Sanitas™ software per the American Society for Testing and Materials (ASTM), Provisional Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs (PS 64-96) in accordance with the methods for intra-well statistical evaluations as specified in the Statistical Analysis Plan for the Site. The database used to conduct the statistical analyses will include all historical groundwater monitoring turbidity results for samples obtained with bailers from the landfill unit since and including the turbidity demonstration conducted in February 2004. The turbidity results will be statistically evaluated during each routine sampling event to determine if a statistically significant increasing trend is indicated and, if indicated, if the recent (current) turbidity result is statistically higher than baseline turbidity conditions for that well. The results of the statistical evaluations of the turbidity results will be included with the routine groundwater monitoring reports submitted to the IDEM. If turbidity results are statistically increasing and the current turbidity result is statistically higher than baseline turbidity conditions, an evaluation of sample representativeness and appropriate remedial measures as necessary would be implemented.

Carriage, Inc.
Draft Class 3 Permit Mod

Addendum to Attachment IV, Appendix G (3)

ITEM 3 of Permit Attachment IV, Appendix G:

[REVISIONS TO THE ANNUAL APPENDIX IX SAMPLING REQUIREMENT THROUGH THE RCRA BURDEN REDUCTION INITIATIVE; FINAL RULE]

ADDENDUM TO PERMIT ATTACHMENT IV:

EXCLUSION OF MONITORING MW-2 FROM ANNUAL SAMPLING REQUIREMENT AND ELIMINATION OF PCBS AND CERTAIN PESTICIDES AND HERBICIDES FROM APPENDIX IX CONSTITUENT LIST FOR ANNUAL SAMPLING REQUIREMENT

QUALITY ASSURANCE PROJECT PLAN (QAPP)
POST-CLOSURE
COMPLIANCE MONITORING PROGRAM FOR GROUND WATER

CARRIAGE HAZARDOUS WASTE LANDFILL UNIT
MILLERSBURG, INDIANA
IND 046398780

TABLE OF CONTENTS

1.0 INTRODUCTION

This is an **Addendum to Attachment IV of the Indiana Department of Environmental Management (IDEM), Hazardous Waste Management, Post-Closure Permit (IND 046398780)** dated September 30, 2003, for the **Carriage Hazardous Waste Landfill Unit,** Millersburg, Indiana. Permit Attachment IV is the Quality Assurance Project Plan (QAPP) which specifies details regarding the Post Closure Compliance Monitoring Program for Ground Water for the Landfill Unit. **This Addendum to the QAPP provides details to justify and define the dropping the annual Appendix IX groundwater monitoring requirement for monitoring well MW-2 and the reduction in constituents for annual Appendix IX groundwater monitoring as proposed in Change #7 to the Permit in the Application for a Permit Modification Request submitted to the IDEM.**

This Addendum was prepared by Heartland Environmental Associates, Inc., on behalf of Carriage, Inc., as part of an Application for a Permit Modification Request submitted by Carriage, Inc., to the IDEM in 2010. It is expected that this Addendum will become part of the QAPP after the proposed changes presented in the Application for a Permit Modification Request are approved by the IDEM.

2.0 JUSTIFICATION AND DEFINITION OF CHANGES TO BE MADE BY ADDENDUM TO PERMIT ATTACHMENT IV

Change #7 in the Application for a Permit Modification Request states the following:

Change #7:

A new condition labeled "9" shall be added under Permit Condition IV.G to read as follows and that references the Addendum to Permit Attachment IV provided in Appendix D of this application:

9. *As allowed through the Resource Conservation and Recovery Act Burden Reduction Initiative Final Rule, effective May 4, 2006, and in accordance with the Addendum to Permit Attachment IV that justifies and defines these changes (see Addendum to Permit Attachment IV):*

   a. *Monitoring well MW-2 may be excluded from the annual sampling required at Permit Condition IV.G.4.*

   b. *The Appendix IX constituent list for the annual determination at Permit Condition IV.G.4 may be reduced to eliminate sampling for PCBs and certain other Pesticide and Herbicide constituents as defined in the Addendum to Permit Attachment IV.*

The rationale justifying and details defining theses changes are as follows:

Monitoring Well MW-2 May Be Excluded from the Annual Sampling Required at Permit Condition IV.G.4:

This change is needed in order to reduce the number of wells for annual 40 CFR 264 Appendix IX monitoring by not requiring the annual 40 CFR 264 Appendix IX monitoring for wells that do not necessarily contribute to the protection of human health and the environment. This change is intended to reduce the monitoring burden for the facility and is in accordance with the Burden Reduction Initiative Rule, effective May 4, 2006.

The Burden Reduction Initiative Rule, effective May 4, 2006, allows for the sampling of a subset of monitoring wells rather than the sampling of all wells during the annual 40 CFR 264 Appendix IX monitoring if the sampling of all the wells does not necessarily contribute to the protection of human health and the environment. Historical monitoring results indicate that monitoring well MW-2, although designated as a downgradient monitoring well, is typically situated sidegradient to

the landfill area or slightly downgradient to a small corner area of the landfill. Therefore, the sampling of monitoring well MW-2 typically does not necessarily contribute to the protection of human health and the environment. Accordingly, the annual 40 CFR 264 Appendix IX monitoring need not be conducted at well MW-2. However, semi-annual compliance monitoring of well MW-2 for the designated compliance constituents shall be conducted at well MW-2 in accordance with Permit Condition IV.C in order to provide a degree of monitoring for this well sufficient for of the protection of human health and the environment.

The Appendix IX Constituent List for the Annual Determination at Permit Condition IV.G.4 May Be Reduced to Eliminate Sampling for PCBs and Certain Other Pesticide and Herbicide Constituents:

This change is needed in order to reduce the constituent list by not requiring the analyses of those annual 40 CFR 264 Appendix IX monitoring constituents that are not likely to be found at the facility. This change is intended to reduce the monitoring burden for the facility and is in accordance with the Burden Reduction Initiative Rule, effective May 4, 2006.

The Burden Reduction Initiative Rule, effective May 4, 2006, allows for the annual monitoring of a subset of the 40 CFR 264 Appendix IX constituents in lieu of all the 40 CFR 264 Appendix IX constituents in order to not require testing for those constituents that are not likely to be found at the facility. Accordingly, with noted exceptions (see below), three categories (PCBs, Herbicides and Pesticides) of the 40 CFR 264 Appendix IX constituents have been determined to be not likely to be found at the facility and need not be tested during the annual 40 CFR 264 Appendix IX monitoring. This reduction in the constituent list is based on the understanding that current and past practices at the facility have not included the manufacture, storage, release or use, beyond possible de minimis quantities, of PCBs, Herbicides and Pesticides listed in 40 CFR 264 Appendix IX and that these constituents have not been detected during historical compliance monitoring at the facility. Furthermore, it is noted that PCBs are generally not mobile in groundwater and thus, if present, would be unlikely to be detected in groundwater samples. However, the following 40 CFR 264 Appendix IX Pesticide and Herbicides must remain on the constituent list for the annual 40 CFR 264 Appendix IX monitoring:

- The Pesticide Beta-BHC must remain on the constituent list for the annual 40 CFR 264 Appendix IX monitoring because this constituent was detected in a sample during the September 2005 Appendix IX annual groundwater monitoring event; and

- The Herbicides 2,4-D; 2,4,5-T; and 2,4,5-TP (Silvex) must remain on the constituent list for the annual 40 CFR 264 Appendix IX monitoring because these constituents are used as Dioxin/Furan-screening compounds in place of direct testing for Dioxins and Furans (unless Dioxins and Furans are directly tested) in accordance with the procedures described in Permit Attachment IV.

If warranted by possible changes in conditions at the facility, the Commissioner may reinstate the testing of PCBs, Herbicides and Pesticides for the annual 40 CFR 264 Appendix IX monitoring.